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DESIR, PIERRE LOUIS	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/731,760	Applicant(s) CHOTKOWSKI ET AL.	
	Examiner Pierre-Louis Desir	Art Unit 2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *09/13/2004*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 23-28, and 32-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Etkin et al. (Etkin), Pub. No US2004/0204108.

Regarding claim 1, Etkin discloses a method for coordinating the use of beam forming between two communicating entities (see fig.1, page 4, paragraph 46) wherein control information regarding the use of beam forming is not communicated between the two entities (i.e. as understood from the specification, the period before the beam forming operations are performed) (see fig. 1, page 4, paragraph 47), the method comprising the steps of: selecting one of the two communicating entities for reduction of the amount in which the selected entity will adjust its beam in response to misalignment between beams emanating from the two entities (i.e. the base station is configured to perform beam forming operations through the use of one or more antenna arrays) (see fig. 1,page 4, paragraph 47); measuring an error in the alignment of the beams emanating from the two communicating entities (i.e. as the base station transmits signal (beam-formed or otherwise), each of the mobile stations within the sector receives the signal and computes a SINR. The SINR levels and requested data rates for a given mobile station will be higher when the beam is directed toward the mobile station, and lower when the

beam is directed away from the mobile station) (see fig. 2, page 5, paragraph 49); selecting at least one adjustment parameter for adjusting the beam of the selected entity (i.e. beam width) (see abstract, and page 2, paragraph 21); and adjusting the beam of the selected entity using the selected adjustment parameter (see page 4, paragraphs 44 and 47).

Regarding claim 2, Etkin discloses a method as described in claim 1 rejection, wherein the two communicating entities are a base station and a WTRU (see fig. 1, page 4, paragraph 46).

Regarding claim 3, Etkin discloses a method as described in claim 1 rejection, wherein the two communicating entities are two WTRUs (see fig. 1, page 4, paragraph 46).

Regarding claim 4, Etkin discloses a method as described in claim 1 rejection, wherein the at least one adjustment parameter is selected from the group consisting of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Regarding claim 5, Etkin discloses a method as described in claim 1 rejection, further comprising the step of: repeating the measuring and adjusting steps until the error measured is below a predetermined value (see page 2, paragraph 15, and page 5, paragraph 49).

Regarding claim 23, Etkin discloses a wireless communication system wherein beams may be adjusted to enhance wireless communications between wireless entities operating in the system (see fig.1, page 4, paragraph 46), the wireless communication system comprising: a plurality of wireless entities, said entities being capable of communicating using beam formed transmission and reception patterns and including a processor for measuring an error in the alignment of their own beam and the beam of another entity with which they are communicating (i.e. the base station is configured to perform beam forming operations through

the use of one or more antenna arrays; also, the base station transmits signal (beam-formed or otherwise), each of the mobile stations (and their processors which would be an inherent disclosure), within the sector receives the signal and computes a SINR. The SINR levels and requested data rates for a given mobile station will be higher when the beam is directed toward the mobile station, and lower when the beam is directed away from the mobile station) (see figs. 1-2, page 4, paragraphs, 46-47, page 5, paragraph 49); and wherein at least one of two communicating wireless entities selects at least one adjustment parameter for adjusting its beam a fraction of the error measured in the alignment of its beam with respect to the beam of the other wireless entity (see abstract, and page 2, paragraphs 14 and 21, page 4, paragraph 44).

Regarding claim 24, Etkin discloses a wireless communication system as described in claim 23 rejection, wherein the processor of the at least one communicating wireless entity is configured to adjust the beam of the at least one wireless entity in an amount equal to the fraction multiplied by the error measured (i.e. referring to claim 22 rejection, the processor of any one of the wireless entities are configured to adjust the beam. Furthermore, with the beam adjustment is inherently in the proper amount as related to the error measurement) (see page 2 paragraph 14, page 4, paragraphs 44 and 47).

Regarding claim 25, Etkin discloses a wireless communication system as described in claim 23 rejection, wherein the processor of the at least one communicating wireless entity is configured to select at least one adjustment parameter for performing said adjustment (see, and page 4, paragraphs 44 and 47).

Regarding claim 26, Etkin discloses a wireless communication system as described in claim 25 rejection, wherein the at least one adjustment parameter is selected from the group

consisting of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Regarding claim 27, Etkin discloses a wireless communication system configured to maintain alignment of its beam with the beam of another wireless entity with which the WTRU is communicating (see fig. 1, paragraph 46), the WTRU comprising: a first processor (inherently included with the mobile station, as known in the art) configured to measure an error in the alignment of a first beam emanating from the WTRU and a second beam emanating from the other wireless entity (i.e. the base station transmits signals (beam formed or otherwise), each of the mobile stations within the sector 10 receives the signal and computes a SINR. The mobile station then selects a corresponding data rate that can be supported and transmits this requested data rate information to the base station over the reverse link DRC (data rate control) channel. The strength of the signal received by each of the mobile stations will vary as the beam transmitted by the base station sweeps through the sector. Each mobile station periodically computes the SINR level of the received signal and transmits the corresponding DRC information to the base station) (see fig. 2, page 5, paragraph 49); wherein the first processor is further configured to select at least one adjustment parameter (i.e. beam width) for adjusting the first beam (see page 2, paragraph 21); and a second processor (inherently includes within the base station) configured to compute a first fraction and adjust the first beam using the at least one selected parameter in an amount equal to the first fraction multiplied by the error measured (see page 4, paragraphs 44 and 47, page 5, paragraph 49).

Regarding claim 28, Etkin discloses a WTRU as described in claim 27 rejection, further comprising: a transmitter configured to transmit the fraction of the measured error that the

WTRU will adjust its beam to the wireless entity with which the WTRU is communicating (i.e. the base station transmits signals, each of the mobile stations within the sector receives the signal and computes a SINR. The mobile station then selects a corresponding data rate that can be supported and transmits this requested data rate information to the base station over the reverse link DRC channel (see page 5, paragraph 49).

Regarding claim 32, Etkin discloses a WTRU as described in claim 27, wherein the at least one adjustment parameter is selected from the group consisting of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Regarding claim 33, Etkin discloses a method for coordinating the use of beam forming between two communicating entities, the method comprising the step of: reducing at least one adjustment parameter of a beam of at least one of two communicating entities communicating with each other using beamed formed transmission and reception signals (see fig. 1, page 4, paragraph 47) wherein a degree of alignment between beams emanating from the two entities is above a predetermined level for a predetermined length of time (see page 2, paragraph 14).

Regarding claim 34, Etkin discloses a method as described in claim 33 rejection, wherein the at least one adjustment parameter that is reduced is beam width (see page 3, paragraph 22).

Regarding claim 35, Etkin discloses a method as described in claim 33 rejection, wherein the at least one adjustment parameter that is reduced is power gain (see page 3, paragraph 22).

Regarding claim 36, Etkin discloses a method as described in claim 33 rejection, wherein the at least one adjustment parameter that is reduced is beam width and power gain (see page 3, paragraph 22).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6-11, 19-22, and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Etkin in view of Raleigh et al. (Raleigh), U.S. Patent No. 6665545.

Regarding claim 6, Etkin discloses 6. A method for coordinating the use of beam forming between two communicating entities (see fig.1, page 4, paragraph 46) wherein control information regarding the use of beam forming is communicated between the two entities (i.e. as understood from the specification, the period when the beam forming operation starts) (see fig. 1, page 4, paragraph 47), the method comprising the steps of: measuring an error in the alignment of beams emanating from the two communicating entities (i.e. as the base station transmits signal (beam-formed or otherwise), each of the mobile stations within the sector receives the signal and computes a SINR. The SINR levels and requested data rates for a given mobile station will be higher when the beam is directed toward the mobile station, and lower when the beam is directed away from the mobile station) (see fig. 2, page 5, paragraph 49); selecting at least one adjustment parameter for a first of the two communicating entities;

selecting at least one adjustment parameter for a second of the two communicating entities (i.e power gain) (see page 2, paragraph 22).

Although Etkin discloses a method as described above, with further step of adjusting the beam of the two communicating entities (see page 4, paragraph 44), Etkin fails to specifically discloses a method comprising the steps of identifying a first correction factor for the first entity; identifying a second correction factor for the second entity; and adjusting the beam of the two communicating entities in an amount equal to the measured error multiplied by the entities' respective correction factors.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), the transmit and the receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize a correction factor for the communication entities must first be inherently determined before the beam of the communication entities can be calibrated or adjusted.

Etkin and Raleigh are analogous art because they are the same field of endeavor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so

would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 7, Etkin discloses a method as described in claim 6 rejection, wherein the two communicating entities are a base station and a WTRU see fig. 1, page 4, paragraph 46).

Although Etkin discloses a method as described above, because of the dependency of this claim on claim 6, Etkin fails to specifically discloses a method comprising the steps of identifying a first correction factor for the first entity; identifying a second correction factor for the second entity; and adjusting the beam of the two communicating entities in an amount equal to the measured error multiplied by the entities' respective correction factors.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), the transmit and the receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize a correction factor for the communication entities must first be inherently determined before the beam of the communication entities can be calibrated or adjusted.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so

would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 8, Etkin discloses a method as described in claim 6 rejection, wherein the two communicating entities are two WTRUs (see fig. 1, page 4, paragraph 46).

Although Etkin discloses a method as described above, because of the dependency of this claim on claim 6, Etkin fails to specifically discloses a method comprising the steps of identifying a first correction factor for the first entity; identifying a second correction factor for the second entity; and adjusting the beam of the two communicating entities in an amount equal to the measured error multiplied by the entities' respective correction factors.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), the transmit and the receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize a correction factor for the communication entities must first be inherently determined before the beam of the communication entities can be calibrated or adjusted.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so

would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 9, Etkin discloses a method as described above (see claim 6 rejection). Etkin also discloses a method in which if the number of mobile stations is less then N.sub.1, the beam forming is turned off (see page 7, paragraph 72). One skilled in the art would immediately conceptualize that the beam-forming turning off is the result of an error measurement being insignificant.

Although Etkin discloses a method as described above, Etkin fails specifically to disclose a method wherein the correction factor of one entity is zero thereby causing said entity to refrain from adjusting its beam

However, Raleigh discloses a method where matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48).

Therefore, it would have been obvious to one of ordinary skilled in the art to combine the teachings of Etkin, as described, with the teachings of Raleigh to arrive at a method as described in the claimed invention. A motivation to do so would have been to arrive at an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming as related to the error measurement.

Regarding claim 10, Etkin discloses a method as described in claim 6 rejection, wherein the at least one adjustment parameter for the first entity is selected from the group consisting of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Although Etkin discloses a method as described above, because of the dependency of this claim on claim 6, Etkin fails to specifically discloses a method comprising the steps of identifying a first correction factor for the first entity; identifying a second correction factor for the second entity; and adjusting the beam of the two communicating entities in an amount equal to the measured error multiplied by the entities' respective correction factors.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), the transmit and the receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize a correction factor for the communication entities must first be inherently determined before the beam of the communication entities can be calibrated or adjusted.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 11, Etkin discloses a method as described in claim 6 rejection, wherein the at least one adjustment parameter for the second entity is selected from the group consisting

of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Although Etkin discloses a method as described above, because of the dependency of this claim on claim 6, Etkin fails to specifically discloses a method comprising the steps of identifying a first correction factor for the first entity; identifying a second correction factor for the second entity; and adjusting the beam of the two communicating entities in an amount equal to the measured error multiplied by the entities' respective correction factors.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), the transmit and the receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize a correction factor for the communication entities must first be inherently determined before the beam of the communication entities can be calibrated or adjusted.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 19, Etkin discloses a method for coordinating the use of beam forming between two communicating entities wherein control information regarding the use of beam forming is communicated between the two entities (see Etkin fig.1, page 4, paragraph 46), the method comprising the steps of: selecting a correction factor and at least one adjustment parameter for each of the entities (refer to claim 6 rejection reasoning and see col. 21, lines 32-48); measuring, at each entity, an error in the alignment of beams emanating from the two communicating entities (see Etkin fig. 2, page 5, paragraph 49).

Although Etkin discloses a method as described above, Etkin fails to specifically describe the step of adjusting the beams using the selected adjustment parameters according to the two entities' respective correction factors and error measurement.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), transmit and receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize that the adjustment or calibration process takes place according to the correction factors and error measurement.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so

would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 20, Etkin discloses a method wherein the at least one adjustment parameter is selected from the group consisting of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Although Etkin discloses a method as described above, because of the dependency of this claim on claim 19, Etkin fails to specifically describe the step of adjusting the beams using the selected adjustment parameters according to the two entities' respective correction factors and error measurement.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), the transmit and the receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize that the adjustment or calibration process takes place according to the correction factors and error measurement.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 21, Etkin discloses a method wherein the at least one adjustment parameter is a plurality of adjustment parameters (see page 2, paragraph 14, and page 3, paragraph 22).

Although Etkin discloses a method as described above, because of the dependency of this claim on claim 19, Etkin fails to specifically describe the step of adjusting the beams using the selected adjustment parameters according to the two entities' respective correction factors and error measurement.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), the transmit and the receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize that the adjustment or calibration process takes place according to the correction factors and error measurement.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 22, Etkin discloses a method wherein the plurality of adjustment parameters are selected from the group consisting of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Although Etkin discloses a method as described above, because of the dependency of this claim on claim 21, Etkin fails to specifically describe the step of adjusting the beams using the selected adjustment parameters according to the two entities' respective correction factors and error measurement.

However, Raleigh discloses a method for coordinating the use of beam forming between two communicating entities (see abstract), the transmit and the receive sections of the particular transceiver employed are calibrated. The calibration procedure and apparatus described herein corrects for differences wherein in the amplitude and phase match between the signal paths through the transceiver corresponding to each antenna element of the frequency channels. This matching correction allows receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize that the adjustment or calibration process takes place according to the correction factors and error measurement.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teachings to arrive at the claimed invention. A motivation to do so would have been to have an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming.

Regarding claim 29, Etkin discloses a WTRU, as disclosed in claim 28 rejection, further comprising: a receiver configured to receive, from the wireless entity with which the WTRU is

communicating, a second fraction with which the entity used to adjusts its beam (i.e. the base station transmits signals, each of the mobile stations within the sector receives the signal and computes a SINR (see page 3, paragraph 22, and page 5, paragraph 49).

Although Etkin discloses a WTRU as described above, Etkin fails to specifically disclose when a second fraction is received, the second processor being configured to compute the first fraction by subtracting one minus the second fraction and adjusting the first beam in an amount equal to the first fraction multiplied by the error measured.

However, Raleigh discloses receive and transmit antenna arrays are designed to provide identical radiation characteristics when operated at receive and transmit frequencies, respectively. Accordingly, in many instances the physical geometries of transmit and receive antenna arrays are simply physically scaled to account for the fractional difference in the receive and transmit RF wavelengths (see col. 5, lines 30-36).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teaching to arrive at the claimed invention. A motivation to do so would have been to arrive at an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming as related to the error measurement.

Regarding claim 30, The WTRU of claim 29 wherein the wireless entity with which the WTRU is communicating is another WTRU (see fig. 1, page 4, paragraph 46).

Although Etkin discloses a WTRU as described above, because of the dependency of the claim on claim 29, Etkin fails to specifically disclose when a second fraction is received, the second processor being configured to compute the first fraction by subtracting one minus the

second fraction and adjusting the first beam in an amount equal to the first fraction multiplied by the error measured.

However, Raleigh discloses receive and transmit antenna arrays are designed to provide identical radiation characteristics when operated at receive and transmit frequencies, respectively. Accordingly, in many instances the physical geometries of transmit and receive antenna arrays are simply physically scaled to account for the fractional difference in the receive and transmit RF wavelengths (see col. 5, lines 30-36).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teaching to arrive at the claimed invention. A motivation to do so would have been to arrive at an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming as related to the error measurement.

Regarding claim 31, WTRU of claim 29 wherein the wireless entity with which the WTRU is communicating is a base station (see fig. 1, page 4, paragraph 46).

Although Etkin discloses a WTRU as described above, because of the dependency of the claim on claim 29, Etkin fails to specifically disclose when a second fraction is received, the second processor being configured to compute the first fraction by subtracting one minus the second fraction and adjusting the first beam in an amount equal to the first fraction multiplied by the error measured.

However, Raleigh discloses receive and transmit antenna arrays are designed to provide identical radiation characteristics when operated at receive and transmit frequencies, respectively. Accordingly, in many instances the physical geometries of transmit and receive

antenna arrays are simply physically scaled to account for the fractional difference in the receive and transmit RF wavelengths (see col. 5, lines 30-36).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine both teaching to arrive at the claimed invention. A motivation to do so would have been to arrive at an accurate adaptive transmit beam forming based on the result of an adaptive receive beam forming as related to the error measurement.

5. Claims 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Etkin and Raleigh in view of Kingsley et al. (Kingsley), U.S. Patent No. 6768454.

Regarding claim 12, Etkin and Raleigh disclose a method for coordinating the use of beam forming between two communicating entities (see Etkin fig.1, page 4, paragraph 46), the method comprising the steps of: selecting a first correction factor and a first adjustment parameter for each of the entities (refer to claim 6 rejection reasoning and see col. 21, lines 32-48); selecting a second correction factor and a second adjustment parameter for each of the entities (refer to claim 6 reasoning and see col. 21, lines 32-48); measuring an error in the alignment of beams emanating from the two communicating entities (see Etkin fig. 2, page 5, paragraph 49); adjusting the beam of both entities using the two first adjustment parameters according to both entities' respective first correction factors (Refer to claim 6 reasoning and see col. 21, lines 32-48); and adjusting the beam of both entities using the two second adjustment parameters according to their respective second correction factors (refer to claim 6 reasoning and see col. 21, lines 32-48). The combination further discloses the transmit and the receive sections of the particular transceiver employed are calibrated, wherein a matching correction allows

receive channel statistics collected for each of the frequency channel to be accurately used within the corresponding transmit channel (see col. 21, lines 32-48). Thus, one skilled in the art would unhesitatingly conceptualize a correction factor for the communication entities must first be inherently determined before the beam of the communication entities can be calibrated or adjusted. In addition, one skilled in the art would immediately envision with calibration procedure, and matching correction process, the sum of the correction factors as related to the receiver, transmitter must be equal to one.

Although the combination discloses a method as described above, the combination fails to specifically discloses the selection for the first and second correction factor, and the first and second adjustment parameter, the measurement of an error in the alignment of beams, and the adjustment of the beam as related to the use and functionality associated with both the azimuth and the elevation dimensions.

However, Kingsley discloses a method in which the elements of the array may be arranged in a substantially linear formation, and may be arranged side by side so as to provide azimuth beam steering or one on top of the other so as to provide elevation as well as azimuth beam steering (see col. 3, lines 55-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Etkin and Raleigh with Kingsley's to arrive at the claimed invention. A motivation for doing so would have been to form an array having maximum or at least improved element gain for a given array factor direction (col. 3, lines 50-54).

Regarding claim 13, Etkin discloses a method as related to claim 12 rejection, wherein the two first adjustment parameters are selected from the group consisting of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Although the combination discloses a method as described above, because of the dependency of this claim on claim 12, the combination fails to specifically discloses the selection for the first and second correction factor, and the first and second adjustment parameter, the measurement of an error in the alignment of beams, and the adjustment of the beam as related to the use and functionality associated with both the azimuth and the elevation dimensions.

However, Kingsley discloses a method in which the elements of the array may be arranged in a substantially linear formation, and may be arranged side by side so as to provide azimuth beam steering or one on top of the other so as to provide elevation as well as azimuth beam steering (see col. 3, lines 55-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Etkin and Raleigh with Kingsley's to arrive at the claimed invention. A motivation for doing so would have been to form an array having maximum or at least improved element gain for a given array factor direction (col. 3, lines 50-54).

Regarding claim 14, Etkin discloses a method as described in claim 13, wherein the two first adjustment parameters are the same for both entities (see page 2, paragraph 14, and page 3, paragraph 22).

Although the combination discloses a method as described above, because of the dependency of this claim on claim 13, the combination fails to specifically discloses the selection for the first and second correction factor, and the first and second adjustment parameter, the measurement of an error in the alignment of beams, and the adjustment of the beam as related to the use and functionality associated with both the azimuth and the elevation dimensions.

However, Kingsley discloses a method in which the elements of the array may be arranged in a substantially linear formation, and may be arranged side by side so as to provide azimuth beam steering or one on top of the other so as to provide elevation as well as azimuth beam steering (see col. 3, lines 55-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Etkin and Raleigh with Kingsley's to arrive at the claimed invention. A motivation for doing so would have been to form an array having maximum or at least improved element gain for a given array factor direction (col. 3, lines 50-54).

Regarding claim 15, Etkin discloses a method as described in claim 13 rejection, wherein the two first adjustment parameters are different for both entities (see page 2, paragraph 14, and page 3, paragraph 22).

Although the combination discloses a method as described above, because of the dependency of this claim on claim 13, the combination fails to specifically discloses the selection for the first and second correction factor, and the first and second adjustment parameter, the measurement of an error in the alignment of beams, and the adjustment of the

beam as related to the use and functionality associated with both the azimuth and the elevation dimensions.

However, Kingsley discloses a method in which the elements of the array may be arranged in a substantially linear formation, and may be arranged side by side so as to provide azimuth beam steering or one on top of the other so as to provide elevation as well as azimuth beam steering (see col. 3, lines 55-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Etkin and Raleigh with Kingsley's to arrive at the claimed invention. A motivation for doing so would have been to form an array having maximum or at least improved element gain for a given array factor direction (col. 3, lines 50-54).

Regarding claim 16, Etkin discloses a method as described to claim 12 rejection, wherein the two second adjustment parameters are selected from the group consisting of boresight orientation, beam width, and power gain (see page 2, paragraph 14, and page 3, paragraph 22).

Although the combination discloses a method as described above, because of the dependency of this claim on claim 12, the combination fails to specifically discloses the selection for the first and second correction factor, and the first and second adjustment parameter, the measurement of an error in the alignment of beams, and the adjustment of the beam as related to the use and functionality associated with both the azimuth and the elevation dimensions.

However, Kingsley discloses a method in which the elements of the array may be arranged in a substantially linear formation, and may be arranged side by side so as to provide

azimuth beam steering or one on top of the other so as to provide elevation as well as azimuth beam steering (see col. 3, lines 55-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Etkin and Raleigh with Kingsley's to arrive at the claimed invention. A motivation for doing so would have been to form an array having maximum or at least improved element gain for a given array factor direction (col. 3, lines 50-54).

Regarding claim 17, Etkin discloses a method as described to claim 16 rejection, wherein the two second adjustment parameters are the same for both entities (see page 2, paragraph 14, and page 3, paragraph 22).

Although the combination discloses a method as described above, because of the dependency of this claim on claim 16, the combination fails to specifically discloses the selection for the first and second correction factor, and the first and second adjustment parameter, the measurement of an error in the alignment of beams, and the adjustment of the beam as related to the use and functionality associated with both the azimuth and the elevation dimensions.

However, Kingsley discloses a method in which the elements of the array may be arranged in a substantially linear formation, and may be arranged side by side so as to provide azimuth beam steering or one on top of the other so as to provide elevation as well as azimuth beam steering (see col. 3, lines 55-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Etkin and Raleigh with Kingsley's to arrive at the

claimed invention. A motivation for doing so would have been to form an array having maximum or at least improved element gain for a given array factor direction (col. 3, lines 50-54).

Regarding claim 18, Etkin discloses a method as described in claim 16 rejection, wherein the two second adjustment parameters are different for both entities (see page 2, paragraph 14, and page 3, paragraph 22).

Although the combination discloses a method as described above, because of the dependency of this claim on claim 16, the combination fails to specifically discloses the selection for the first and second correction factor, and the first and second adjustment parameter, the measurement of an error in the alignment of beams, and the adjustment of the beam as related to the use and functionality associated with both the azimuth and the elevation dimensions.

However, Kingsley discloses a method in which the elements of the array may be arranged in a substantially linear formation, and may be arranged side by side so as to provide azimuth beam steering or one on top of the other so as to provide elevation as well as azimuth beam steering (see col. 3, lines 55-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Etkin and Raleigh with Kingsley's to arrive at the claimed invention. A motivation for doing so would have been to form an array having maximum or at least improved element gain for a given array factor direction (col. 3, lines 50-54).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Scherzer et al., "Adaptive antenna array wireless data access point," Pub. No. U.S. 20010031647.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Louis Desir whose telephone number is 703-605-4312. The examiner can normally be reached on Monday-Friday from 0800-1630.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R Hudspeth can be reached on (703) 308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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